DERIVATIVE OF SIN AND COS

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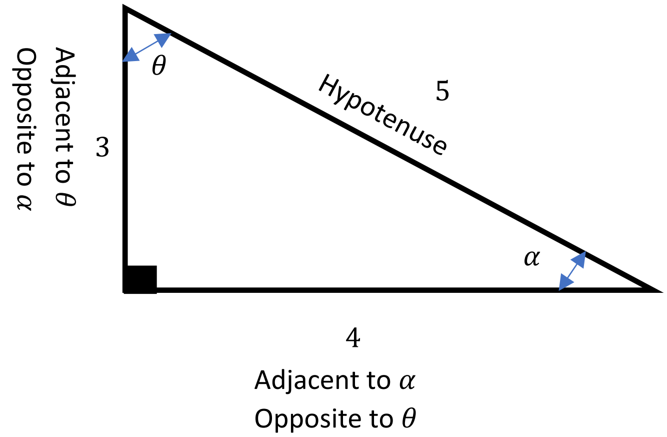
The derivative of $\sin\theta = \cos\theta$ and $\frac{dy}{dx}\cos x = -\sin x$

The sin is positive, and cos is negative. However, sometimes we forgot which sign for which function. In case, you were in an exam and forgot and you have a time to revise your answers or make sure that you gave each function its correct sign when applying the derivative. Think of the Pythagoras' Theorem



Assuming $\theta = 60° \; and \; \alpha = 30°$

Then we know that $\sin 45 = \cos 45 = \frac{\sqrt{2}}{2} = 0.707$

$$\sin 60 = \frac{Opposite}{Hypotenuse} = \frac{4}{5} = 0.8$$

$$\sin 30 = \frac{Opposite}{Hypotenuse} = \frac{3}{5} = 0.6$$

$$\cos 30 = \frac{Adjacent}{Hypotenuse} = \frac{4}{5} = 0.8$$

$$\cos 60 = \frac{Adjacent}{Hypotenuse} = \frac{3}{5} = 0.6$$

Draw the two functions by these three points of each function

For Sine, you can see the line direction is increasing (up) and

the tangent is positive (+1), while for Cosine the line direction is decreasing (down) and the tangent is negative (-1). You can also

apply the tangent formula $\frac{y2-y1}{x2-x1}$

For $\sin x = \frac{0.8-0.6}{60-30} = \frac{0.2}{30}$ for $\cos x = \frac{0.6-0.8}{60-30} = \frac{-0.2}{30}$